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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,855	09/25/2003	Jae-Phil Boo	SAM-0225DIV	9751

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EXAMINER

OJINI, EZIAMARA ANTHONY

ART UNIT PAPER NUMBER

3723

DATE MAILED: 11/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/670,855

Applicant(s)

BOO ET AL.

Examiner

Anthony Ojini

Art Unit

3723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 9-21 and 32-36 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23-31 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7 and 22 is/are rejected.
- 7) ☒ Claim(s) 6 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/877,922.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/22/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's election of **Group I, species I**, illustrated in Figures 2-5, 6A-6C, 9, 10A, 10B and 10C, without traverse filed 10/8/04 is acknowledged. Applicant stated that claims 1-9, 22-31 read on **species I**. Claims 9-21, 32-36 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a non-elected species, there being no allowable generic or linking claim.

Claim 9 is not readable because the expression "at least one membrane dividing said carrier to form at least two chambers" reads on non-elected species.

Election was made **without** traverse filed 10/8/04.

Claim Objections

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered **claims** 29, 29, 30, 31, 32, 33, 34 and 35 have been renumbered 29, 30, 31, 32, 33, 34, 35 and 36.

Claim 27 is objected to because of the following informalities: claim 27 depend on itself and for the purpose of this office action, claim 27 will be treated as been depended on claim 26. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 7, line 1, the phrase "each of said films" lacks antecedent basis.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Govzman et al. (5,957,751 A).

With respect to claim 1, Govzman et al. disclose a polishing head for polishing a wafer, comprising: **a carrier (100); a retaining ring (110)** disposed on a lower edge of the carrier; **a supporter (104,182)** disposed in the carrier configured to provide **first and second chambers (290,200)** separated from each other, the supporter including a surface portion having a flat surface, **a plurality of first openings (260)** communicating with the first chamber (290), **a passage (156)** communicating with the second chamber (200); **at least one flexible membrane (118)** enclosing a surface of portion of the

Art Unit: 3723

supporter, said membrane spaced apart from the surface portion (see fig. 4); and having a **plurality of apertures** formed at the approximate center of the membrane wherein at least one aperture corresponding to the first opening (see col. 9, lines 34-35 & fig. 4).

Govzman et al. fail to disclose a plurality of holes communicating with the second chamber and a plurality of third holes corresponding to the first holes.

It would have been obvious to one having ordinary skill in the art at the time the invention to modify the device of Govzman et al. to include a **plurality of holes** communicating with the second chamber and a **plurality of third holes** corresponding to the first holes so as to force a fluid to the membrane and apply a downward pressure to the flexible membrane.

With respect to claim 2, Govzman et al. disclose wherein an edge of the surface portion of the supporter is chamfered (see fig. 4).

With respect to claim 3, Govzman et al. fail to disclose wherein an edge of the surface portion of the supporter is rounded.

It would have been an obvious matter of design choice to make the edge of the surface portion of the supporter rounded of whatever form or shape was desired or expedient **so as to provide a seal between the membrane and the peripheral of the supporter**. A change in form or shape is generally recognized as being within the level of ordinary skill in the art, absent any showing of unexpected results. *In re Dailey et al.*, 149 USPQ 47.

With respect to claim 4, Govzman et al. disclose wherein the first chamber has a fluid passage communicating external to the polishing head (see col. 8, lines 19-20).

With respect to claim 5, Govzman et al. disclose wherein the second chamber has a fluid passage communicating external to the polishing head (see col. 8, lines 44-46 & fig. 4).

With respect to claim 7, Govzman et al. disclose a thin annular sheet of a flexible material (162) that appears to have a thickness less than that of the membrane (118) but fail to disclose a plurality of films that has a thickness less than that of the membrane. It would have been obvious to one having ordinary skill in the art at the time the invention to provide the device of Govzman et al. with a plurality of films that has a thickness less than that of the membrane so as to provide a seal between the membrane and the peripheral edge of the supporter.

With respect to claim 22, Govzman et al. is discussed above in claim 1. Govzman et al. also disclose an apparatus for polishing a substrate comprising a supporting portion having an abrasive pad (32) disposed thereon; and a polishing head disposed over the abrasive pad (see fig. 1).

Allowable Subject Matter

Claims 23-31 are allowed over prior art.

Claims 6 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the art of record considered as a whole, alone or in combination, neither anticipates nor renders obvious a head for polishing a wafer, comprising a membrane enclosing an outer surface of the supporter and having a like plurality of second holes in alignment with the first holes of the supporter, said membrane being spaced apart from the outer surface of the supporter in a first position and abutting the outer surface of the supporter in a second position.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Barns et al., Natalicio, Inaba, Tolles et al., Chen, Wang et al., Numoto, Gotcher, Chen et al., Zuniga et al. disclose polishing carrier head for a chemical mechanical polishing apparatus respectively

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Ojini whose telephone number is 703 305 3768. The examiner can normally be reached on 7 to 4 Tuesday-Friday with every other Monday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 703 308 2687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 3723

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AO
11/1/04

A handwritten signature in black ink, appearing to read "A. P. Hui", is located in the lower right quadrant of the page.